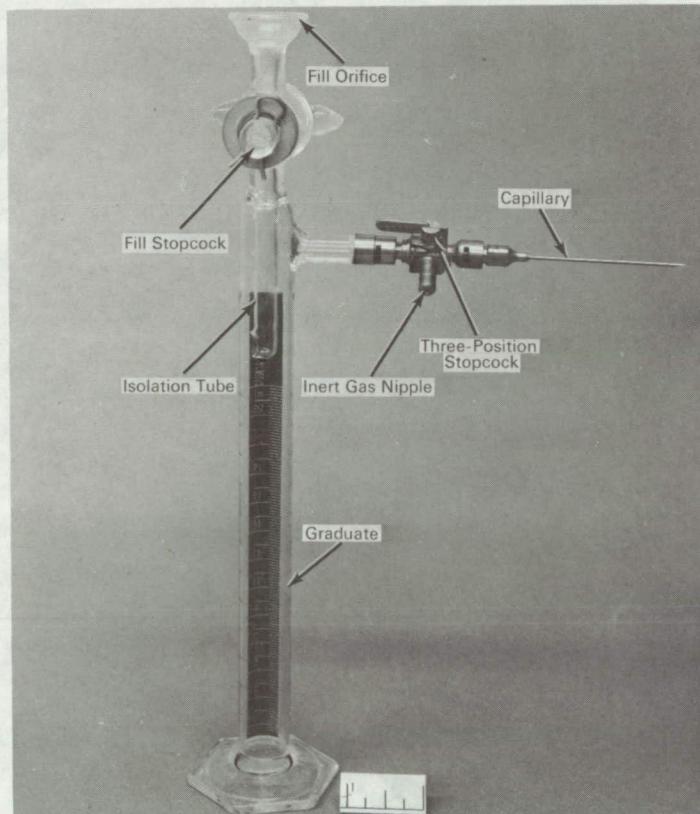


# NASA TECH BRIEF



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## Dispensing Graduate for Butadiene



A graduate has been designed for dispensing small volumes of liquid butadiene-1,3 or other volatile liquids which are in the gaseous state at room temperature. This dispensing graduate enables small volumes of volatile fluids to be measured and transferred to laboratory reaction vessels more accurately and conveniently than is feasible with the conventional method which requires differential weighing of heavy

pressure bottles. Measurement accuracies of  $\leq 0.1$  ml can be obtained with this graduate.

The graduate is fitted with a stopcock, an isolation tube, and a side tube containing a three-position stopcock and a capillary (hypodermic needle). To fill the graduate, it is immersed in a refrigerant bath and purged with an inert gas, which enters the fill orifice (stopcock open) and escapes through a bubble trap

(continued overleaf)

connected to the inert gas nipple. Butadiene, or other condensable gas, is then introduced (either separately or simultaneously with the inert gas) through the fill orifice and allowed to condense in the graduate. When the desired amount of liquid has accumulated, both the fill stopcock and three-position stopcock are closed and the connection to the bubble trap is broken. To dispense the liquid, the graduate is removed from the refrigerant, the capillary is inserted through a septum in a reaction vessel, and the three-position stopcock is opened to the proper position so that the desired volume of liquid can be poured into the vessel. The isolation tube prevents the liquid from contacting the stopcock during the pouring operation.

**Note:**

Details may be obtained from:

Clearinghouse for Federal Scientific and  
Technical Information  
Springfield, Virginia 22151  
Price \$3.00  
Reference: B68-10524

**Patent status:**

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